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INNOVATION: COFFEE SHOP SYSTEM DEVELOPMENT
INNOVATION OCCURS WHEN WORLDVIEWS ARGUE

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Abstract

The authors are concerned about how Information Systems (I.S.) managers might contribute their expertise in the management of information to encourage the birth of innovative industries. Evidence from the now extensive management and economics innovation literature argues that, in order to encourage innovation, it is necessary to design an evolving mix of social networks between organisations that encourages a range of very different tacit core competencies to meet. The soft and multiple perspective literature from the Information Systems discipline literature may then be useful to provide a more 'personal level' analysis of these meetings, especially using the 'inquiry systems' work that has derived from Churchman[1971].

Keywords: Innovation, ISD, tacit core competency, multiple perspectives

Introduction

Lawson [1999] summarises the extensive economic literature that indicates that major innovations occur when people with tacit core competencies mix in complex social ways "between" organisations, causing localised technology transfer and diffusion. He draws on examples like Silicon Valley, the Boston and Cambridge Rings. This finding is important to those trying to design local economies to compete in virtual global markets that demand financial returns typical of successful innovations. It also means we need to refocus on the between-organisations systems. Appreciating the power of Morgan's [1986] organisational metaphors to assist with focusing, the "coffee shop" metaphor of between-organisations communication is invoked here. This paper elaborates and justifies this metaphor by considering tacitness, core competency, types of social routines and argumentation. In particular, it argues that a system of appropriate social networking needs to be encouraged between organisations.

Tacitness

An argumentative system [Metcalfe, 2000] is one that encourages human beings to debate and reason, in the richest possible way, in order to create new knowledge. In this case, the 'argument' is about the successful application of tacit core competencies. The concept of tacit knowledge, as compared to explicit knowledge, is now well established in the Information Systems (I.S.) literature [Polanyi, 1962]. In essence, it is knowledge acquired from experience, examples being skiing, design and management. While the supporters of the "database model" of knowledge management merely see tacit knowledge as a challenge in how to make this knowledge explicit, the "network model" of knowledge management [Alavi, 2001] argues that, by definition, tacit knowledge cannot be made explicit. In the search for innovation, tacitness is relevant because, if nothing else, it gives the holder a commercial advantage. Further, it tends to be more generic; able to be applied to wider range of problems in a more imaginative way. This may be because it has not been "ritualised" by language.

Tacitness has the advantage that it protects skills against imitation to the extent that other firms can only acquire this knowledge through reproducing experiences and activities responsible for the sequential process of learning-by-watching, learning-by-doing, and learning-by-interaction with others. In contrast, codifiable or explicit knowledge can sometimes be guarded by intellectual property rights. Merely examining artifacts can identify both tacit and explicit knowledge but acquiring the tacit knowledge can be difficult without direct and lengthy experience. Therefore, tacit knowledge is identified as the type of knowledge relevant to

considerations of innovation, if immediate and retaliatory competition is to be avoided. It provides the "what to talk about" in the coffee-shop.

Core Competency

This tacit knowledge also needs to be in some form of core competency[1] (Belussi and Fabio, 1998; Lawson, 1999; and Prahalad and Hemel, 1990). This is knowledge that spans both specific constellations of business activities and also particular groupings of products within a corporation. It is "within product ranges". Products are merely the momentary expression of a corporation's core competencies, which are more stable and evolve more slowly than do products. Core competencies are an expression of collective learning in the organisation and are enhanced through application and shared utilisation. They include the coordination of diverse production skills and integration across constellations of technologies. So competition in product markets is therefore the surface expression of a deeper competition between firms over their portfolios of deep level competencies (Rumelt, 1994, p. xvi, cited in Lawson, 1999, p. 154).

Lawson [1999] elaborates by separating out various "knowledge levels" arguing that core competencies involve knowledge at a more conceptual level encompassing "technological spill-overs, conventions, rules and languages for developing, communicating and interpreting knowledge, etc." plus "common understanding which makes up the cultural, socio-economic industrial atmosphere." To this he adds the ability to innovate, or "collective learning, … defined as the creation and further development of a base of common or shared knowledge among the individuals within a productive system, allowing for the coordination of action and the resolution of problems." He reinforces its tacit nature by suggesting that it is learnt from social interaction, and learning-by-doing within an appropriate group. This facilitates tacit knowledge flows, somehow allowing what might be alternatively described as unplanned, synergistic, expertise-mixing.

Core competencies, therefore, do get shared in day to day organisational life as collaboration. "…in sequential stages in supply chains: frequent sharing of equipment, the possibility of jointly taking on large orders, large pools of appropriately skilled labour, etc." Lawson cites additional forms of cooperation through "…the sharing of technical information and subcontracting to other (often less successful) competitors, [and] refraining from wage competition and labour poaching" (p. 159). However, often in these situations there is insufficient diversity of core competencies being shared to allow real innovation. This provides the "how do you know" in the coffee shop meeting.

IS managers should be able to help with facilitating this aspect of building innovative systems by ensuring the socio-network knowledge management systems is given as much attention as the repository model [Alari, 2001]. This would include focusing on tacit knowledge rather than explicit knowledge and on group support systems rather than database management.

Ways of Meeting

It is argued that, for innovation, different tacit core competencies need to meet socially. In business this is called networking, in private life socialising. In evolutionary economics literature, the term social routines is used, let us settle on social networking. The literature on social networking for economic development has been extensively discussed by the evolutionary economist, Schumpeter.[2] He classifies these social networks as formal vs informal, internal vs external to organisations, by professional and trade affiliations, and purely social. The evolutionary economic literature presents these routines as evolving, being in competition with each other where some become more established and productive than others depending on the environment. Coffee shop meetings between business people at lunchtime is one example, but of a type that has been found to be important for innovation. However, it seems important not to be prescriptive but rather to encourage a whole series of types of networks. Indeed, a "permaculture" of different networks needs to be encouraged and evolved so as to allow different tacit core competencies to meet in different ways. Put another way, Nelson and Winter (1982) point out that these networks are themselves tacit. They reject Paul Romer's (1986) notion that these social networks can be explicitly codified. Rather Nelson and Winter argue the tacitness of the networks is important for the same reason tacit knowledge is important; for the communication, interpretation, or coordination of unpredictable activities.

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[1] An alternative terminology to "core competencies" and one well used in the IS literature is "worldviews". It is assumed that core competencies give the actors a certain worldview. Innovation appears to work when these worlds collide usefully.

[2] The origins of the evolutionary approach to thinking about innovation and science and technology policy draw inspiration from Schumpeter (1911, 1942).

This evolutionary perspective on the social networks assists by highlighting the need to consider, 1) their environment, 2) their processes generating variety in these social routines, 3) their mechanisms of their election, and 4) their mechanisms of their inheritance (Nelson and Winter, 1982, p. 400). In combination, these are seen as explaining and determining the survival and evolution of the networks so that they can adapt to the particular 'spill-over benefits' that are require to nurture new industries. For better or for worse, the type and form of these networks will go on, not only to influence whether there is any lock-in on innovation, but whether and how this lock-in will diffuse.

The point of this paper is to get IS managers to think, in their situation, how they can encourage the growth of these "coffee shop" social networking as an essential part of designing an innovative system. Belussi and Fabio, (1998, p. 415) agree that the aim is to blur the distinction between social networking that is internal and external to the organisation. By expanding the definition of organisations, and thus integrate its social networks into the "between-organisations" space, there is an increased potential for the organisation to internalise many of the benefits derived from the external networks. This may lead to new competencies (skill, knowledge) through the invasion (or acquisition) of new networks and thus establish new modes of organisational learning and knowledge transfer. Using Alari's [2001] terminology, the socio-network models of knowledge management need to be designed so as to explicitly include beyond the boundaries of the organisation. Ensuring that the promoter of these systems gains some commercial advantage from any resulting innovation can then only be a matter of developing a genuine collaborative working relationships with employees.

There is a need to rethink old legalistic definitions (metaphors) of organisations. Belussi and Fabio (1998) build on the seminal efforts of Richardson by discussing the problem with the traditional focus on inter-firm ***contracts*** and agent roles. This legal and polarising metaphor has served to encourage neglect of the important aspects of what happens between organisations and so discourage thought on the opportunities of extending the conceptual boundaries of organisations to incorporate "… full cooperation in complex clusters and alliances, close to integration." To counter this, they favour encouraging the more realistic 'make-subcontract-cooperate' or 'loosely-buy' view of commercial contracts. There is a need to manage implicit contracts explicitly, including social network architectures and the between-organisations learning processes.

Evidence of the importance of the between organisation learning, and of the need for social networking to allow tacit knowledge transfer also comes from recent analysis of patent citations. This has highlighted the costly and localised nature of technology transfer and diffusion (Patel and Varga, 1997; Patel and Pavitt, 1998). These studies have shown that most *critical* R&D is conducted by multi-national corporations in their home base, rather than by subsidiaries overseas. Although some R&D obviously does occur in overseas subsidiaries, careful study reveals that such research activity generally does little more than support marginal changes in product specifications and processes to meet local tastes and regional product standards. Physical clustering does seem to be necessary to allow innovation. One way of reading this is not to assume a nationalistic conspiracy but rather that the industry has grown up amidst the right social networking and these are now firmly established. Thus the home base is the most innovative environment in the industry and always likely to out compete new sites. This has ramifications for thinking about the effectiveness of virtual organisations for innovations.

Inquiring Systems

So far it has been argued that the design of an information system for innovation should focus on mixing tacit core competencies and meeting through an evolving systems of social networks. The aim is to set up evolving networking systems. This analysis has been very much at a national, group or organizational level, typical of economic analysis. The Information Systems literature, that stems from Churchman [1971] and Mitroff and Linestone [1984], argues that any system needs to be viewed both at this organizational level and at the 'personal' level in order to gain a complete picture of the problem domain. So far, little has been said about personal differences, interpersonal skills, motivations or inquiry methods and therefore little has been said about what these people should actually do when they meet. Clearly, if they don't focus on innovative issues in an effective manner, then all else may well be in vain. Yet on the other hand, if these meeting are to be serendipitous and primarily social, there is no way to guarantee that the participants will effectively collude to be innovative.

The coffee shop meeting is, in effect, undertaking a group systems inquiry. IS is the discipline most concerned with the pragmatics of information exchange. In the case of Churchman's inquiry systems [1971], these pragmatics are supported by the extensive philosophical theory of knowledge literature. Mitroff and Linstone [1993] have applied Churchman's work to what they call the Multiple Perspective approach to inquiry. Mitroff and Linstone align their approach with Freud's division of anxieties in people's lives into Professional, Personal and Political. Mitroff and Linstone argue that a good IS inquiry will consider the Technical, Personal and Organisational (T.P.O.) aspects of the problem domain; that successful achievement of a complex human activity requires careful consideration, and a balance, of these three perspectives. 'Technical' meaning, ensure whatever is being innovated delivers on functionality. If it is a new 'chip', they ensure it works as per its specification. 'Personal'

means ensure the effort required to sustain an innovation will fit with the personal lives of all the stakeholders. Have the interpersonal issues been resolved? Will any lifestyle changes be acceptable? 'Organisational' meaning, have the working relationships been worked out? The politicking between stakeholders can destroy good ideas. All these need to be balanced by the innovative team assuming a dynamic environment.

Churchman, supported by Mason and Mitroff, also encourage the appropriate use of analysis, mathematics and logic to deal with the objective knowledge involved. For appreciation of the perceptions of others, such as competitor's responses, they advocate the seeking of diverse views from a wide range of possible stakeholders. For the personal perspective they suggest a careful analysis of personal attributes of the coffee shop group, such as ethics and motivation. For this to be effective it is important that the project be carefully defined, this is not an easy task. The group will constantly redefine the project and this means there needs to be very good communication between the group. The mechanism for ensuring information exchange is constantly validated and understood, a slightly argumentative atmosphere needs to be developed. This needs to be balanced between quarrels and avoiding 'group think' (uncritical support). Competition through debate should act as a guarantor that any knowledge be well founded. The reasoned argument process, which has been promoted by philosophers for over 2000 years, appears to be the most powerful and pragmatic means of creating and validating any knowledge used by the group. The multiple perspectives methodology therefore helps ensure a wide range of ideas are considered. It also acts to acknowledge the importance of actively pursuing diverse views on complex social issues rather than seeking consensus views or advocating the search for the 'correct' view. It is the local outcome of accepting an interpretive inquiry methodology.

There are some inquiry methods not made explicit by Churchman's holistic approach. Examples include Marx and Engle's [Sowell, 1985] dialectic inquiry methodology. This requires an appreciation that the emergence of any artifact is the result of tension between at least the underlying technological, social, economic and political forces that act at a national and organizational level. While Marx thought they would eventually resolve themselves, it is not clear either that innovators can wait or that the resolution would not be chaos. Identification of the underlying forces acting for or against a innovation can be a useful exercise. ["You can't understand the caterpillar if you don't know about butterflies"]. Churchman uses Hegel as the source for the social construction of knowledge through language. More recently the work of Habermas has come to the fore. This aligns with what was said above about the use of argument to validate perspectives. He seeks rational discourse. The limit of Habermas's work [Ulrich, 1983] appears to be that there are not equal power relationships between the innovators and other potential stakeholders such as the suppliers of finance and so reasoned argument may not be as effective as family connections for example.

A simple solution to how this advice about how the coffee shop group might pursue an inquiry about the feasibility of an innovative idea is not reasonable. It cannot be reduced to a mechanical technique. Inquiry and project management, like finance, may be a core competency that has to be present at a meeting of the innovators. The tacit skill of how best to progress the inquiry will most likely come from one of the group member's everyday commercial experience. However, the holistic approach advocated by Churchman can be applied to the problem domain of the designing of innovative systems with a region or cluster of industries. The Technological (T) perspective suggests some quantitative work: numbers of companies, their functions, employees, their demographics, possible local sources of venture capital, project definition experts, and so on including the production of a socio-metric network of who meet whom for what and how within those clusters. The Organizational (O) (or political) level perspective is considered very important in overcoming the social habits of people with the correct tacit core competencies, in motivating organisations like Government departments, Universities and Chambers of Industry to act as effective intermediaries. Participants' perceptions of what is possible may need to be sought and managed. The Personal (P) level focuses on the needs, motivations and personalities of those likely to act in various roles during the conception, and start up, phases of any innovative project. The underlying technical, economic, political and social environment needs to be considered and added into the melting pot of activities.

Conclusion

This paper has tried to provide some focus for the design of innovation birthing systems. Complex social interaction, between peoples with tacit core competencies, operating in the social routines between organisations (including research organisations and the Government) was advocated. This was symbolized by use of the coffee shop metaphor. The empirical economic evidence supports this by showing that most innovation comes from physically clustered companies such as the Cambridge Ring and Silicon Valley with a complex social networking infrastructure. The process of birthing innovation seems to be one of providing the opportunity for people with tacit core competences to learn from watching, feeling, arguing and doing. IS managers may be able to contribute to regional development by providing advice at a more personal level of analysis such as thinking about information exchange systems operating between organisations and by promoting the richer inquiry methodologies typified by Churchmans' application of the Theory of Knowledge to the design of inquiry systems.

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